Structural Pull Test Information

Pull Test Objective: A pull test can be performed in-lieu of a theoretical analysis to structurally certify payload hardware on the WB-57. While a theoretical structural analysis remains the recommended method for certifying payload hardware, pull tests can be practical in certifying lightweight payload components that possess complex load geometries in their attachments. For safety reasons, a theoretical analysis should always be performed on heavily loaded components of a payload in both design and crash load cases.

Test Instructions: Structural pull tests must be performed using appropriately calibrated tension gauges. Loads induced in the pull test must accurately simulate (i.e. correct magnitude, direction, and location) design loads and crash loads as specified in Chapter 2 of the WB-57 User's Guide. Payload hardware that can be theoretically analyzed does not require any type of pull test. NASA property (i.e. a pallet, wing pod, etc.) may not be utilized to assist any type of pull test.

Documentation Instructions: The following information is required via the Payload Data Package (reference Chapter 3 of the WB-57 User's Guide) to sufficiently document any pull test conducted on a payload assembly or subassembly:

- Describe the pull test setup, what tools were used and the means in which tools were calibrated to provide accurate tension readings. Diagrams and digital pictures are encouraged.

- In tabular form, describe which component was tested, the weight of that component, what load case it was tested for (i.e. 3 g forward crash load), the tension load induced on the component, whether or not the component satisfied the load requirements outlined in Chapter 2 of the WB-57 User's Guide, the date the test was performed, and who performed the test. Any diagrams, digital pictures, and/or free body diagrams that can be provided to help describe the location and the orientation of the load being induced on a component is encouraged.

- If a combination of pull tests and theoretical analysis was performed to structurally certify payload hardware, clearly display where pull tests were performed and where the theoretical structural analysis was performed. Document the theoretical structural analysis according to instructions in Chapter 3 of the WB-57 User's Guide.